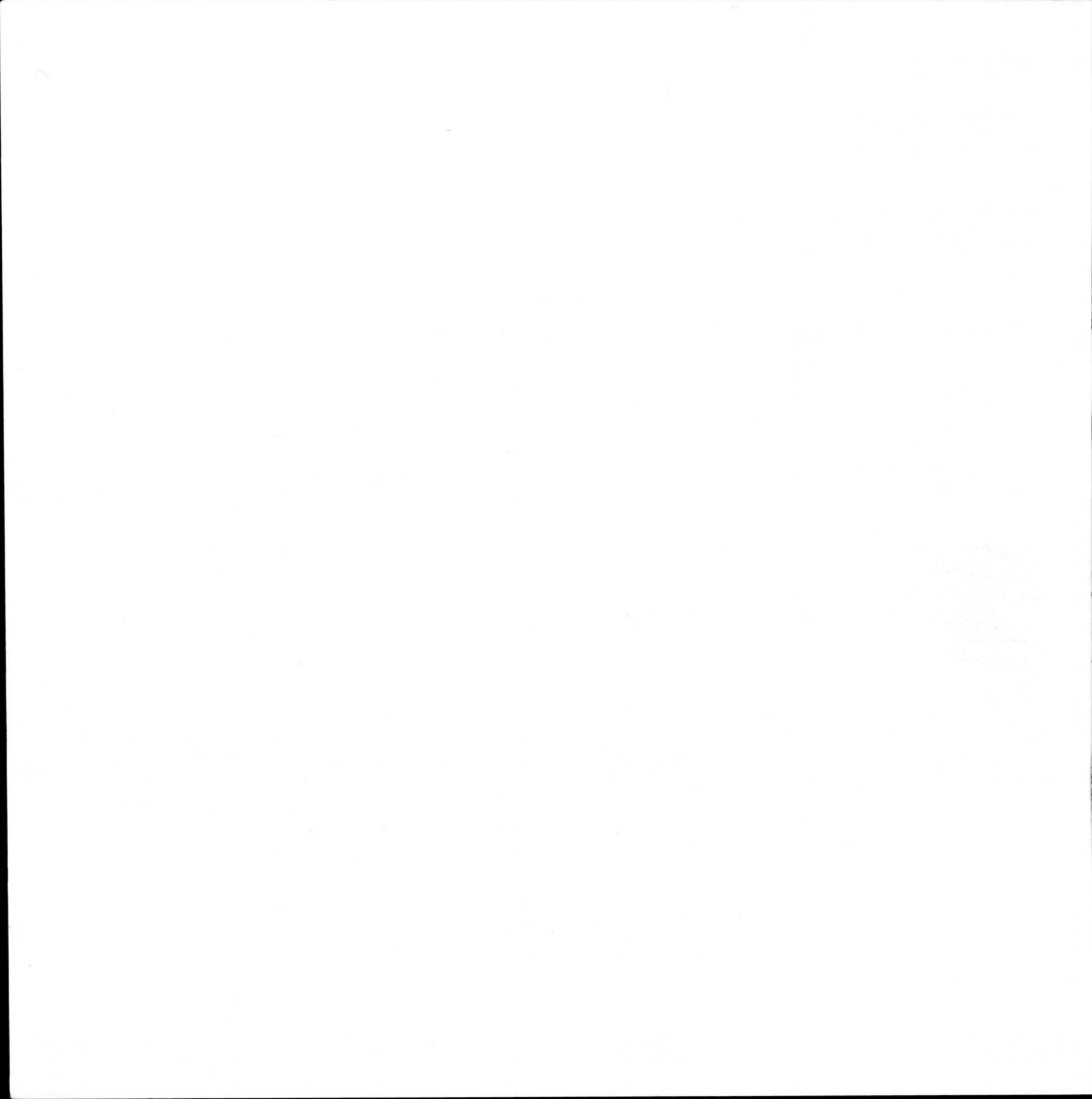
US 150

Alimentatore a Commutazione
Switched Mode Power Supply

ITALIANO

US 150

alimentatore a commutazione per basse tensioni

Particolarità ed innovazioni

L'alimentatore US 150 funziona con ingresso rete di 220-240 V a.c. (117 V a.c. per il mercato USA) ed ha 5 tensioni di uscita di cui 4 per elimentare le schede logiche (+5, -5, +12, -12 V c.c.) ed una per alimentare le lampade delle gettoniere (+5 V d.c.).

Nell'alimentatore è prevista una posizione comune di fissaggio sia della terra rete che di tutte le parti metalliche della macchina (sportello, plancia, monitor ecc.), eliminando così la possibilità d'interferenze prodotte da cablaggi mal distribuiti e garantendo una più facile omologazione alle nuove norme internazionali, sia di sicurezza che di irradiazione.

L'alimentatore è corredato da un supporto metallico per il suo alloggiamento all'interno della macchina; il supporto può essere fissato in qualsiasi posizione l'operatore desideri e quindi, con una semplice manovra, l'alimentatore può essere facilmente inserito e rimosso senza necessità di usare attrezzi.(vedi illustrazione a pag. 6.)

Data l'applicazione in apparecchiature e/o in ambienti particolarmente caldi, è stata studiata la possibilità di un raffreddamento forzato con l'ausilio di un ventilatore da aggiungere in caso di necessità. Per questa applicazione, seguire le istruzioni a pag. 7.
(Per richiesta cod. 62010081).

In ogni caso, un dispositivo di protezione blocca il funzionamento dell'alimentatore fino al ripristino della corretta temperatura di funzionamento evitando così danni alla componentistica e richiamando nello stesso tempo l'attenzione dell'operatore sull'anomalia applicativa.

L'alimentatore è corredato di: 1 connettore a 3 posizioni per l'ingresso rete; 1 connettore a 2 posizioni per l'alimentazione delle lampade delle gettoniere; 1 connettore a 9 posizioni per l'alimentazione delle schede logiche; di 16 contatti maschi (no. 2 di riserva); di 5 viti M4 e 5 rondelle dentellate per l'ancoraggio delle terre al punto comune.

US 150

CARATTERISTICHE D'INGRESSO

TENSIONE DI RETE	da 187 a 264 V.a.c.	da 85 a 135 V.a.c. (USA)
FREQUENZA	da 50 a 60 Hz	
CORRENTE DI SPUNTO	<30 A di picco	

CARATTERISTICHE DI USCITA

ALIMENTAZIONE CIRCUITI LOGICI	+5 V.d.c. +3%/-5%	1,5 A min - 10 A max aggiustabile da 4,7 V a 5,6 V sovratensione massima 6,5 V.d.c. protetto elettronicamente da sovraccarico e cortocircuito	ripple <50 mVpp
	+12 V.d.c. +15%/-4%	0 A min - 3 A max protezione al corto circuito	ripple <100 mVpp
	-12 V.d.c. ±6%	0 A min - 0,5 A max protetto elettronicamente da sovraccarico e cortocircuito	ripple <100 mVpp
	-5 V.d.c. ±6%	0 A min - 0,5 A max protetto elettronicamente da sovraccarico e cortocircuito	ripple <100 mVpp
ALIMENTAZIONE LAMPADE	+5 V.d.c.	1 A max	protetto da fusibile
TEMPO DI MANTENIMENTO DELLE TENSIONI AL CADERE DELLA RETE			>20 ms

ALTRE CARATTERISTICHE

ISOLAMENTO (fra rete e uscite)	1500 V.a.c. (classe 1 IEC 950)
TEMPERATURA AMBIENTE DI LAVORO	da 0°C a +50°C
TEMPERATURA DI IMMAGAZZINAMENTO	da -20°C a +85°C
PESO NETTO	1,200 Kg

ATTENZIONE!

APPLICANDO L'ALIMENTATORE PER UNA POTENZA DI USCITA MAGGIORE DI 45W A 50° CENTRIGRADI AMBIENTE, SI CONSIGLIA DI INSTALLARE IL VENTILATORE INTERNO, IN OGNI CASO, UN DISPOSITIVO DI PROTEZIONE BLOCCA IL FUNZIONAMENTO FINO AL RIPRISTINO DELLA CORRETTA TEMPERATURA.

ENGLISH

US 150

low tension switched mode power supply

Features and Inovations

The US 150 power supply operates from mains input voltages of 220-240 V a.c. (117 V a.c. for the US market) and has 5 supply outputs, of which 4 feed the logic boards (+5, -5, +12, -12 V d.c.) and one feeds the coin mechanism lamps (+5 V d.c.).

There is a common eathing strip with tapped holes for linking the mains earth to all metal parts of the machine (door, control, panel, monitor etc.), so eliminating interference from badly routed cables, and guaranteeing easier compliance with international standards for safety and radiation.

The unit is supplied with a metal mounting plate for easy fixing within the machine cabinet; the plate may be mounted anywhere within the cabinet, and the power supply unit can easily be inserted into the plate and removed from it without the use of any tools, see illustration on page 6.

To cater for applications in cabinets or climates with high ambient temperatures, there is the possibility to add a small ventilator; this is described on page 7.
(To order part n. 62010081).

In any event, a protective sensor switches of the unit in case of overheating, and automatically allows it to operate again only after regaining the correct working temperature. In this way component damage is avoided, and at the same time the operator's attention is drawn to the abnormal condition.

The unit is supplied with:

1 3- pin connector for mains input

1 2- pin connector for the coin mechanism lamps

1 9- pin connector for the logic board supplies

16 M4 screws and shake-proof washers for the earthing strip.

US 150

INPUT CHARACTERISTICS

V a.c. VOLTAGE	*187 ÷ 264*	*85 ÷ 135 (USA)*
FREQUENCY	*50 ÷ 60 Hz*	
SWITCH-ON INRUSH CURRENT	*30 A PEAK*	

OUTPUT CHARACTERISTICS

LOGIC CIRCUIT SUPPLY	*+5 V d.c. +3%/-5%*	*1.5 A min. - 10 A max.* *adjustable between 4.7 a 5.6 V* *max. overvolts 6.5 V d.c.* *electronically protected from short-circuit*	*ripple <50 mVpp*
	+12 V d.c. +15%/-4%	*0 A min. - 3 A max.* *protected from short-circuit*	*ripple <100 mVpp*
	-12 V d.c. ±6%	*0 A min. - 0.5 A max.* *electronically protected from short-circuit*	*ripple <100 mVpp*
	-5 V d.c. ±6%	*0 A min - 0.5 A max* *electronically protected from short-circuit*	*ripple <100 mVpp*
LAMPS SUPPLY	*+5 V d.c.*	*1 A max.*	*protected by fuse*

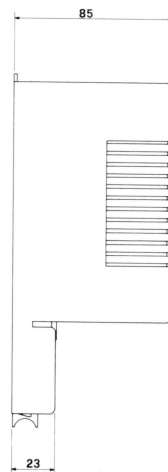
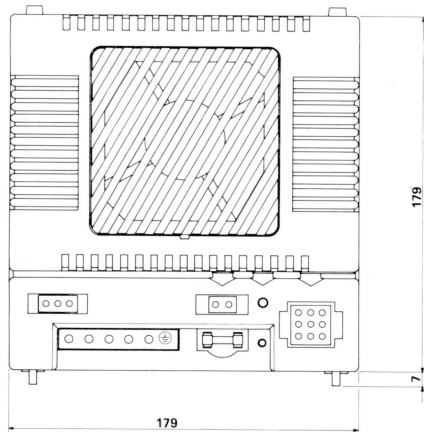
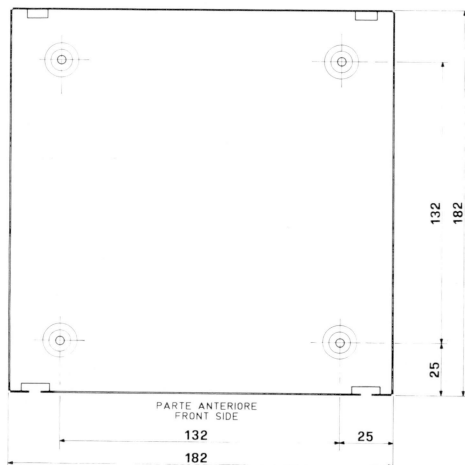
TIME OUTPUT VOLTAGE ARE MAINTAINED AFTER REMOVAL OF MAINS INPUT VOLTAGE >20 ms

OTHER CHARACTERISTICS

INSULATION (mains input to D.C. outputs)	*1500 Va.c. (class 1-IEC 950)*
AMBIENT WORKING TEMPERATURE	*0°C to + 50°C*
AMBIENT STORAGE TEMPERATURE	*-20°C to + 85°C*
NET WEIGHT	*Kg. 1.200*

ATTENTION!

FOR APPLICATIONS WHERE THE POWER UNIT IS TO SUPPLY IN EXCESS OF 45 W AT 50°C AMBIENT, THE INTERNAL VENTILATOR SHOULD BE INSTALLED. IN ANY EVENT, A PROTECTION DEVICE BLOCKS THE FUNCTIONING OF THE UNIT UNTIL IT AUTOMATICALLY RESETS WHEN THE TEMPERATURE FALLS TO THE CORRECT LEVEL.

DATI MECCANICI / *MECHANICAL DATA*

SUPPORTO / *SUPPORT BRACKET*

Ⓘ ISTRUZIONI RELATIVE AL MONTAGGIO DEL SUPPORTO

N.B. L'alimentatore viene fornito con il supporto metallico già applicato; di conseguenza agire come segue:

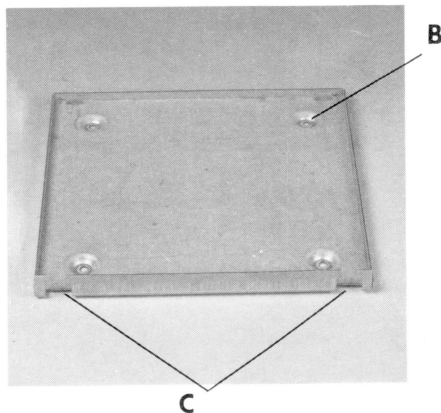
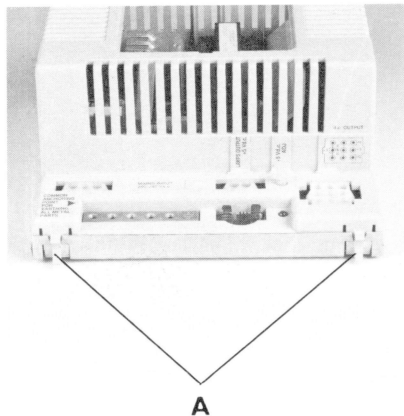
1. - premere, spingendo verso l'alto, sui due fermi (A) in modo da separare l'alimentatore dal supporto metallico.

2. - Posizionare il supporto nel punto desiderato e fissarlo con 4 viti nei fori predisposti (B); in questa operazione, fare attenzione che il supporto sia rivolto verso l'operatore con il lato indicato dalla lettera C onde facilitare il montaggio e lo smontaggio dell'alimentatore.

Ⓖⓑ ISTRUCTIONS FOR MOUNTING SUPPORT PLATE

N.B. For despatch, the power unit is packed mounted onto the support plate; the following instructions are for fixing into the games cabinet:

1. - Press upwards on the two catches (A) so as to separate the power supply unit from the mounting plate.

2. - Position the mounting plate in the desired position in the cabinet, and fix it with four screws through the holes provided (B); make sure that the side of the mounting plate marked C is nearest to the operator so as to facilitate subsequent removal of the unit from the plate.

(I) ISTRUZIONI RELATIVE AL MONTAGGIO DEL VENTILATORE

1. - Togliere il coperchio che funge da supporto del ventilatore (A).

2. - Inserire il ventilatore nei perni guida del supporto corrispondenti ai 4 fori dello stesso (B); effettuare una pressione tale da far scattare i 4 ancoraggi di tenuta (C.).

3. - Inserire il connettore femmina, (D) nel connettore maschio saldato sul circuito stampato indicato come J4.

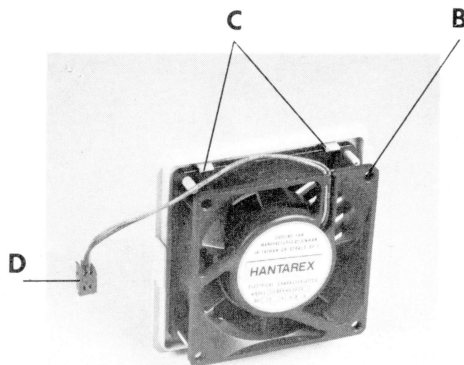
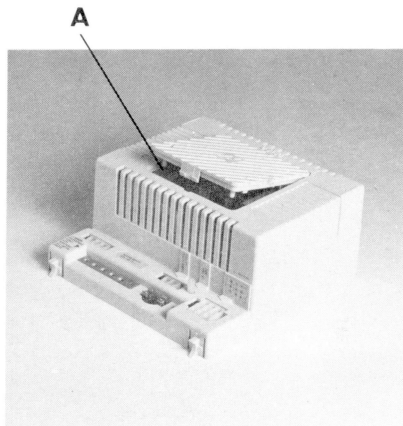
4. - Riposizionare il coperchio così assiemato nella posizione originale.

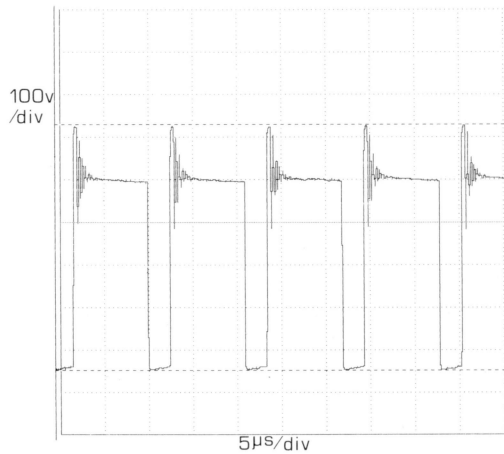
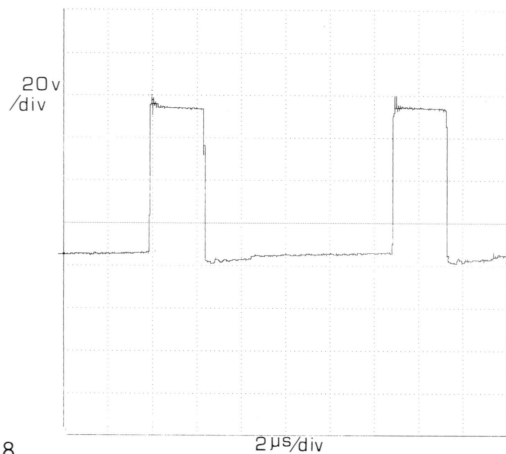
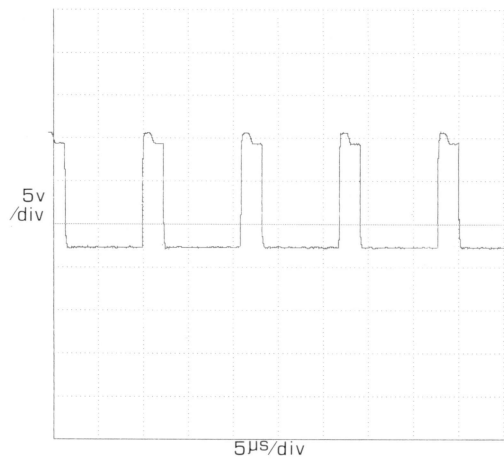
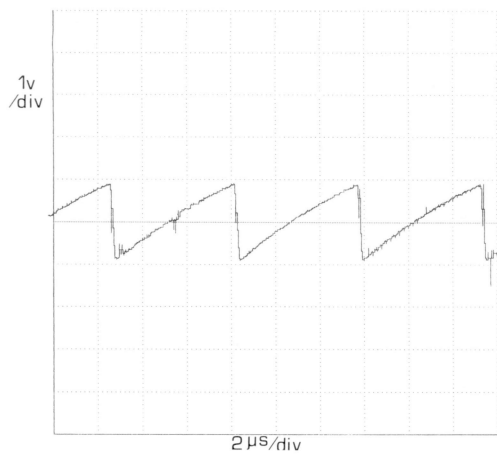
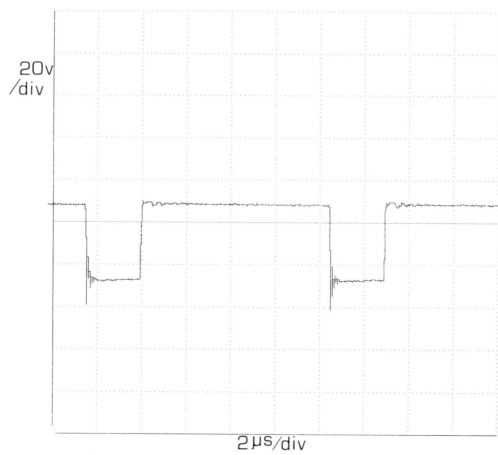
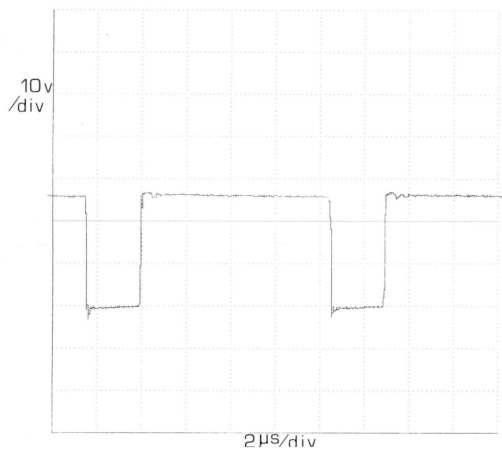
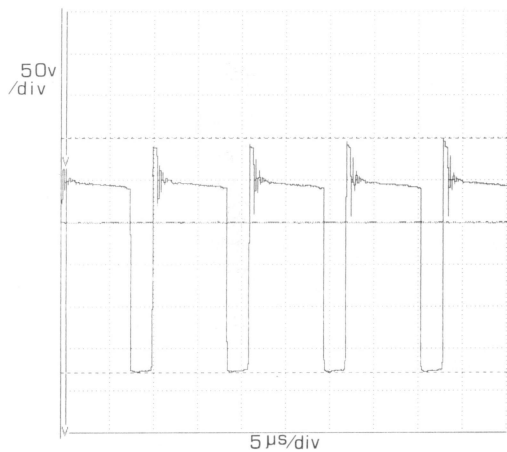
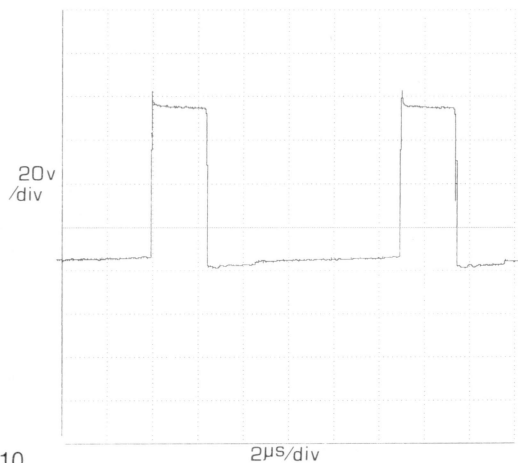
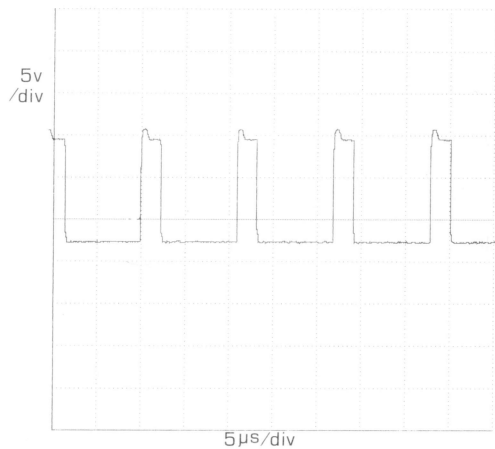
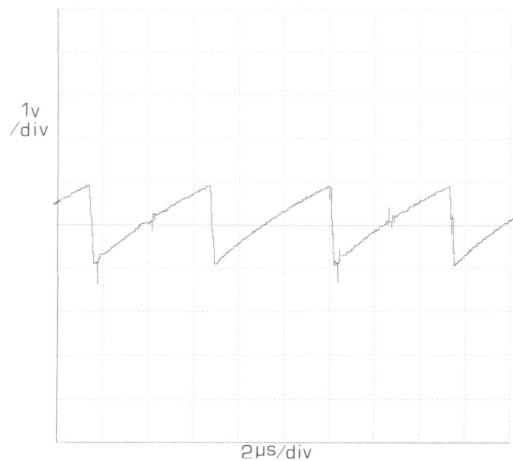
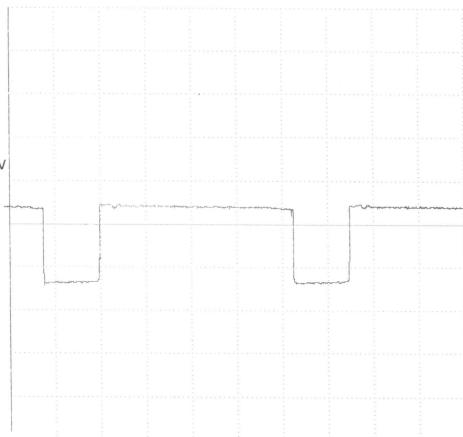
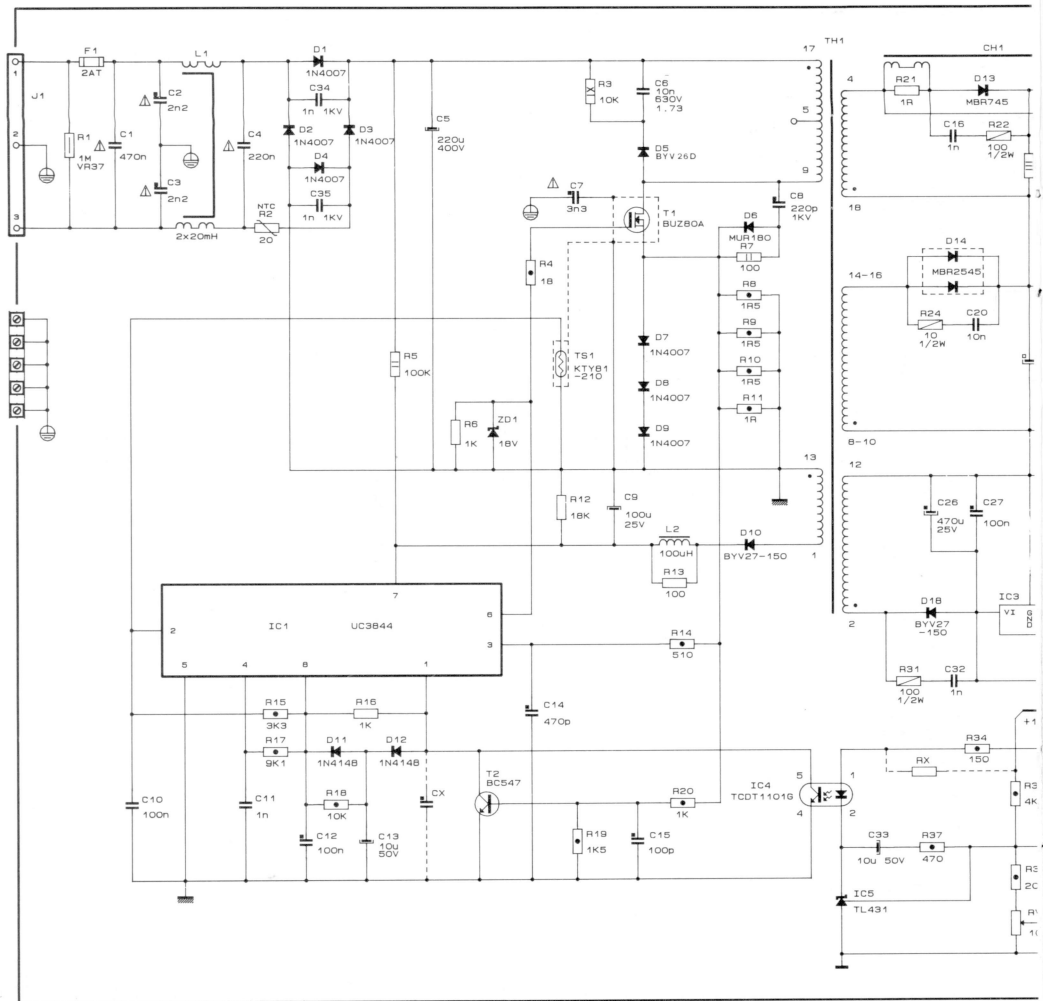
(GB) ISTRUCTIONS FOR MOUNTING THE VENTILATOR

1. - Remove the cover which will now be used as the ventilator support.

2. - Locate the four holes (B) in the ventilator onto the four guide pins; apply sufficient pressure to operate the locking catches (C).

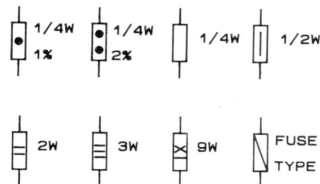
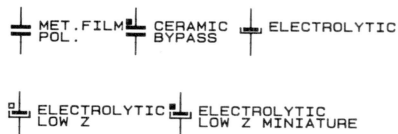
3. - Push the free socket connector (D) onto the plug connector soldered to the p.c.b.

4. - Replace the assembled cover into its original position.

FORME D'ONDA / *WAVE FORMS 220 Va.c.*

10v
/div
2µs/div
20v
/div
2µs/div

FORME D'ONDA / *WAVE FORMS 110 Va.c.*

10v
/div
2µs/div
20v
/div
2µs/div

HANTAREX

RESISTANCE

CAPACITANCE

MET.FILM POL. — CERAMIC BYPASS — ELECTROLYTIC

ELECTROLYTIC LOW Z — ELECTROLYTIC LOW Z MINIATURE

DIFFERENT COMPONENTS MOUNTED ON 110 V a.c. VERSION ON PAGE 17

⚠ FOR SAFETY POURPOSES, REPLACE ALL COMPONENTS MARKED WITH THIS SYMBOL WITH AN IDENTICAL TYPE.

MAIN P.C.B. ASSEMBLY

CODE	DESCRIPTION	REF. No.	Q.TY
62014420	P.C.B. ASSEMBLY POWER SUPPLY US 150 220/110 V.a.c.		1
20140042	PHOTO COUPLING DIODE TCDT 1101G	IC4	1
20150420	DIODE BYV 28/150	D15	1
20151230	DOUBLE SCHOCTKY DIODE MBR2545	D14	1
20151440	SCHOCTKY DIODE MBR745	D13	1
20180280	GREEN LED DIODE 5 M.M.	DL1	1
20430502	TRANSISTOR BUZ 80 A	T1	1
20440030	THYRISTOR TYP212	SCR1	1
20620071	INTEGRATED CIRCUIT MA7905	IC2	1
20620086	INTEGRATED CIRCUIT MA7912	IC3	1
20671470	INTEGRATED CIRCUIT UC3844	IC1	1
21000230	NTC 20E 2322.644.90026	R2	1
21531000	METAL OXIDE RESISTOR 100E 5% 2W	R7	1
21561001	METAL OXIDE RESISTOR 100K 5% 2W	R5	1
21623300	METAL OXIDE RESISTOR 33E 5% 3W	R23	1
22451000	VERT. WIREWOUND RESISTOR 10K 10% 9W	R3	1
23031006	SEALED CARBON TRIMMER, HORIZ. PT10NV 100E	RV1	1
23341006	RADIAL ELECT. CAPACITOR 1000MF 16V 105°	C18-24	2
24342202	RADIAL ELECT. CAPACITOR 2200MF 16V 105°	C17-21-22	3
24434707	RADIAL ELECT. CAPACITOR 470MF 25V 105°	C26	1
24932203	RADIAL ELECT. CAPACITOR 220MF 400V 85°	C5	1
25651002	CAPACITOR, POLYPROP. 1.73 10NF 630V	C6	1
25762201	CAPACITOR, POLYESTER 1.58 220NF 250VAC 10%	C4	1
25764700	CAPACITOR, POLYESTER 1.58 470NF 250VAC 10%	C1	1
26410600	CERAMIC CAPACITOR 1NF 1KV	C34-35	2
26422621	RADIAL CERAMIC CAPACITOR 2.2NF 250V 20%	C2-3	2
26433601	RADIAL CERAMIC CAPACITOR 3.3NF 400V 20%	C7	1
28020640	HORIZ. COIL 100MH	L2	1
28020110	SECONDARY COIL +5	L4	1
28028900	SECONDARY COIL +12	L3	1
28028510	SWITCH TRANSFORMER UTF408	TH1	1
28028530	MAIN FILTER	L1	1
29100001	TIME-DELAY FUSE 1A 250V 5X20 "IMQ"	F2	1
29100018	TIME-DELAY FUSE 2A 250V 5X20 "IMQ"	F1	1
29100080	FUSE HOLDER CLIPS	(F1-2)	4
29500140	FT 10x6x4 N30 TOROIDAL COIL	CH1	1
30000751	TEMPERATURE SENSOR KTY 81-210	TS1	1
34074232	2 WAY PRESSACO CONNECTOR RED M.2S3562	J4	1
34074610	9 WAY BURNDY CONNECTOR UHR950T	J2	1
34074630	3 WAY BURNDY CONNECTOR UHR350T	J1	1
34074640	2 WAY BURNDY CONNECTOR UHR250T	J3	1
43000011	SPRING FOR TO220 UTH38	(D13-14-T1)	3
43000550	RETAINING SPRING FOR TEMPERATURE SENSOR UTH5074	(TS1)	1

CODE	DESCRIPTION	REF. No.	Q.TY
50110140	RESISTOR BRACKET UTH601	(R3)	1
50428550	INSULATOR 2KV	(D13-T1)	2
50430750	TRIMMER ADJUSTMENT SHAFT (GREEN) UTH3325	(RV1)	1
20100001	DIODE 1N 4148	D11-12	2
20110091	ZENER DIODE 18V 1/2W 5%	ZD1	1
20110720	ZENER DIODE 5.6V 1/2W 5%	ZD2	1
20150008	DIODE 1N4007	D1-2-3-4-7-8-9-17-19	9
20150433	DIODE BYV 27/150	D10-18	2
20180170	DIODE MUR180	D5-6	2
21211000	CARBON RESISTOR 1E 5% 1/4W	R21	1
21211002	METAL LAYER RESISTOR 1E 1% 1/4W	R11	1
21211501	METAL LAYER RESISTOR 1.5E 1% 1/4W	R8-9-10	3
21221802	METAL LAYER RESISTOR 18E 2% 1/4W	R4	1
21222200	CARBON RESISTOR 22E 5% 1/4W	R26	1
21231000	CARBON RESISTOR 100E 5% 1/4W	R13-27	2
21231501	METAL LAYER RESISTOR 150E 1% 1/4W	R34	1
21232001	METAL LAYER RESISTOR 200E 1% 1/4W	R38	1
21233571	METAL LAYER RESISTOR 357E 1% 1/4W	R36	1
21234700	CARBON RESISTOR 470E 5% 1/4W	R28	1
21234702	METAL LAYER RESISTOR 470E 1% 1/4W	R37	1
21235101	METAL LAYER RESISTOR 510E 1% 1/4W	R14	1
21241000	CARBON RESISTOR 1K 5% 1/4W	R6-16-29	3
21241002	METAL LAYER RESISTOR 1K 1% 1/4W	R20	1
21241502	METAL LAYER RESISTOR 1.5K 1% 1/4W	R19	1
21243302	METAL LAYER RESISTOR 3.3K 1% 1/4W	R15	1
21244221	METAL LAYER RESISTOR 4.22K 1% 1/4W	R35	1
21249101	METAL LAYER RESISTOR 9.1K 1% 1/4W	R17	1
21251000	CARBON RESISTOR 10K 5% 1/4W	R25	1
21251002	METAL LAYER RESISTOR 10K 1% 1/4W	R18	1
21251800	CARBON RESISTOR 18K 5% 1/4W	R12	1
21321001	RESISTOR, NON-FLAMMABLE, 10E 5% 1/2W	R24	1
21324700	CARBON RESISTOR 47E 5% 1/2W	R32-33	2
21331002	RESISTOR, NON-FLAMMABLE, 100E 5% 1/2W	R22-31	2
21371004	METAL LAYER RESISTOR 1M 5% 1/2W VR37	R1	1
20400429	TRANSISTOR BC547B	T2	1
20620679	INTEGRATED CIRCUIT TL431CLP	IC5	1
24431059	RADIAL ELECT. CAPACITOR 100MF 25V 85°	C9	1
24521019	RADIAL ELECT. CAPACITOR 10MF 50V 85°	C13-28-31-33	4
25161029	CAPACITOR, POLYESTER 1.85 100NF 63V	C10	1
25241029	CAPACITOR, POLYESTER 1.85 1NF 100V	C11-16-32	3
25251049	CAPACITOR, POLYESTER 1.85 10NF 100V	C20	1
26310109	CERAMIC CAPACITOR 100PF 50V NPØ	C15	1
26322129	RADIAL CERAMIC CAPACITOR 220PF 1KV	C8	1
26347119	CERAMIC CAPACITOR N750 470PF 50V	C14	1
26610619	RADIAL CERAMIC CAPACITOR 100NF 50V	C12-19-23-25-27-29-30	7

CONTAINER ASSEMBLY

CODE	DESCRIPTION	REF. No.	Q.TY
50121770	METAL SUPPORT UTH5075		1
50123170	BASE PLATE US150 UTH5072		1
50430370	PVC PROTECTION UTH5144		1
50430380	PLASTIC CONTAINER UTH5070		1
50430390	VENTILATOR SUPPORT COVER		1

PACKING ASSEMBLY

CODE	DESCRIPTION	REF. No.	Q.TY
52828840	POLYSTYRENE PACKING PIECES US 150 220V/110V		2
53885450	US 150 USER'S MANUAL		1

ACCESSORIES AS SUPPLIED

CODE	DESCRIPTION	REF. No.	Q.TY
34074650	9 WAY BURNDY CONNECTOR UHP901*G		1
34074670	3 WAY BURNDY CONNECTOR UHP301*G		1
34074680	2 WAY BURNDY CONNECTOR UHP201*G		1
34076400	BURNDY MALE LUGS UHM1200G		16
40114007	M 4x6 CAP-SCREWS Tcc PH UNI7687		5
42000540	TOOTHED WASHER DIN6798A 4.3x8x0.5		5

DIFFERENT COMPONENTS MOUNTED ON 110 V a.c. VERSION

Differenze di componentistica per la versione 110 Va.c.

CODE	DESCRIPTION	REF. No.	Q.TY
21364700	RESISTOR 470K 1/2W 5% VR 37	R1	1
21000330	NTC 5 OHM PHILIPS P/N 2322.644.90018	R2	1
22442200	RESISTOR 2.2K 9W 5%	R3	1
21554700	RESISTOR 47K 2W 5%	R5	1
21622700	RESISTOR 27 OHM 3W 5%	R7	1
21306300	RESISTOR 0.68 OHM 1/2W 5%	R8-9-10	3
21305600	RESISTOR 0.56 OHM 1/2W 5%	R11	1
21213300	RESISTOR 3.3 OHM 1/4W 5%	R30	1
29100392	FUSE 3.15 AT 5x20 UL-CSA	F1	1
25561002	CAPACITOR, POLIEST. 1.60 100NF 400V	C6	1
26433601	CERAMIC CAPACITOR 3.3NF 400V	C36	1
25641002	CAPACITOR, POLIEST. 1.73 1NF 630V	C8	1
20432320	IRF 740 TRANSISTOR	T1	1
20150131	DIODE BY 255	D1-2-3-4	4
24941000	ELECT. CAPACITOR 1000MF 200V	C5	1
28028540	MAINS FILTER 2x6MM	C1	1
28028520	SWITCH TRANSFORMER	TH1	1
20151160	DIODE MUR 140	D5	1